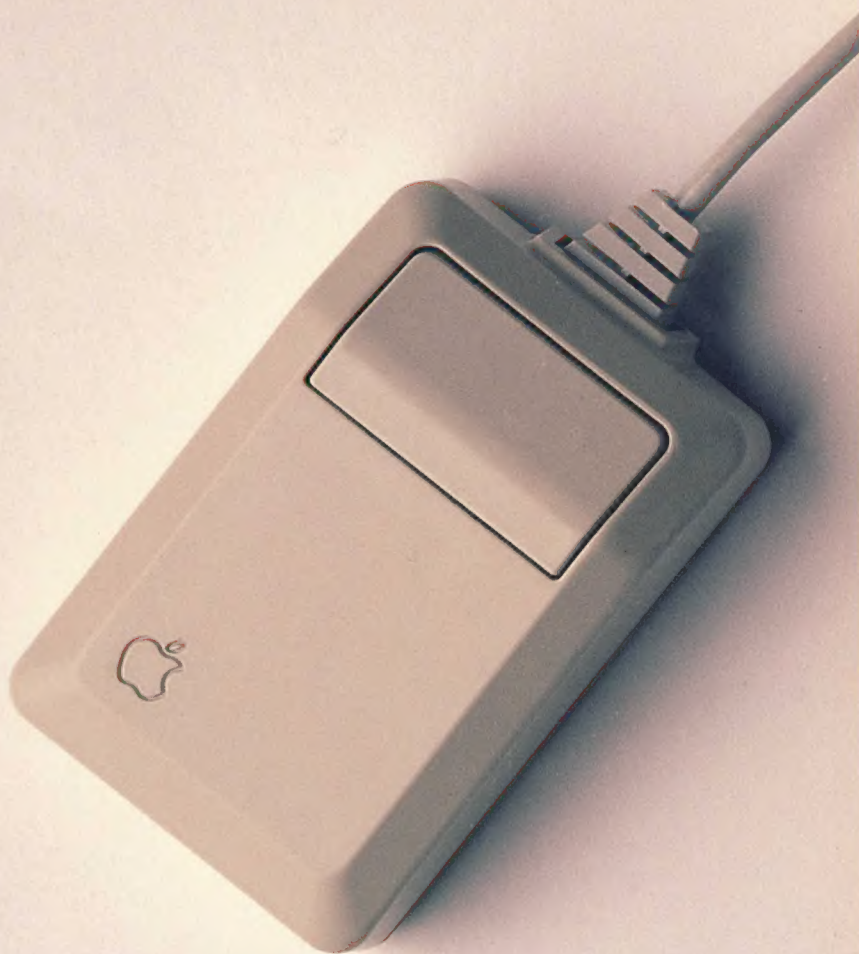




*Apple Mouse IIc
User's Manual*

The Apple IIc



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Warning

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

The Apple IIc



Apple Mouse IIc User's Manual

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Radio Frequency Interference Statement

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if you use a "rabbit ear" television antenna. (A "rabbit ear" antenna is the telescoping-rod type usually contained on TV receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem:

- Disconnect the peripheral devices and their input/output cables one at a time. If the interference stops, it is caused by either the peripheral device or its I/O cable. These devices usually require shielded I/O cables. For Apple peripheral devices, you can obtain the proper shielded cable from your dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interference stops.
- Move the computer to one side or the other of the TV or radio.
- Move the computer farther away from the TV or radio.
- Plug the computer into an outlet that is on a different circuit than the TV or radio. (That is, make certain the computer and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV.

If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission:

"How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, stock number 004-000-00345-4.

About This Manual

This manual tells you all about installing and using your AppleMouse. Here is a summary:

- Chapter 1 introduces you to the mouse and tells you some of the things it can do.
- Chapter 2 presents detailed instructions for hooking your mouse up to your Apple IIc computer.
- Chapter 3 explains MousePaint, a fascinating graphics program included in your mouse package.
- Chapter 4 tells you how to take care of your mouse.

You can hook up and enjoy your mouse without knowing anything about programming. However, if you are a programmer, you will find Appendix A useful. Appendix A contains instructions and sample routines if you want to write your own mouse programs in BASIC.

Throughout this manual, you'll see the symbols explained below. Pay particular attention to the information in the paragraphs identified by these symbols.

Captions, definitions, and other short items appear in marginal notes like this.

Gray boxes contain especially useful or interesting information.



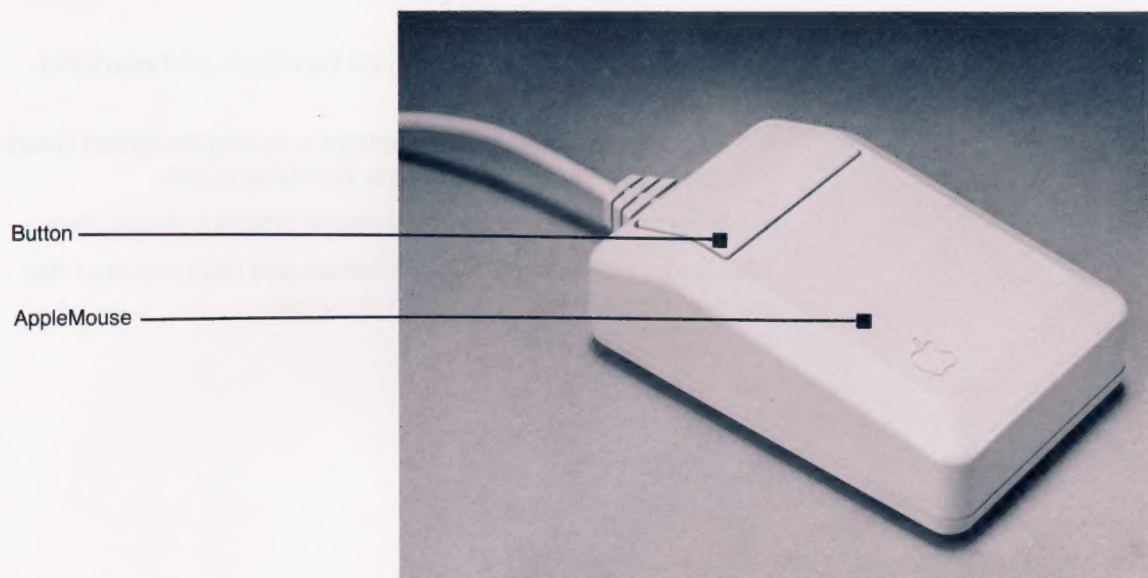
Warning

Warning boxes indicate potential problems or hazardous situations in which you can damage or destroy programs or information.

Here Comes the Mouse

The AppleMouse (Figure 1-1) is a hand-held device, connected to your Apple IIc computer by a flexible cable. As you move your mouse about on the table next to your computer, it makes a cursor move in exactly the same way on your monitor screen. By moving the cursor to different symbols on the screen, you can tell your Apple IIc what you want it to do. The AppleMouse represents one of the simplest and most versatile computer input devices available today.

Figure 1-1. AppleMouse



Mouse Programs

Your mouse requires special software. It works only when you have loaded your computer with a program that has been written for it. One such program, *MousePaint™ Drawing Program* (we'll call it *MousePaint* for short), is on the disk that came packed with your AppleMouse. It provides a fun way for you to get experience handling your mouse. Other AppleMouse programs are being issued

constantly; check with your Apple dealer for details. If you understand programming, you can even write your own mouse programs; Appendix A in this manual will get you started.

Caution: When you buy programs to use with your mouse, make sure that they are designed to be compatible with the AppleMouse.

A Few Mouse Tricks

The AppleMouse gives you an entirely new way to control your Apple IIc computer. Instead of typing commands from the keyboard, you can now interact directly with your monitor screen. You can see exactly what you are doing as you do it.

You can do things with your mouse that would be impractical with keyboard entries. For instance:

- You can create pictures directly on the screen, as if your hand were holding an artist's pencil.
- You can select menu options simply by moving the screen cursor to them, instead of having to type identifying codes.
- You can move text or graphic elements around on the screen.

All these techniques (and more) are illustrated in MousePaint, the graphics program that comes with your mouse.

Hooking It Up

Connecting the Mouse

To start the fun, you'll need to connect the AppleMouse to your Apple IIc computer.

1. Make sure that your computer is switched off before you begin.
2. On the back of your computer, find the first port on the left (as you face the back of the computer). It is labeled with the pictures of a joystick and a mouse. Plug the mouse cable connector into this port as you shown in Figure 2-1.
3. Secure the cable connector to your computer by finger tightening its thumbscrews.

Figure 2-1. Connecting the Mouse to the Apple IIc Computer



Next, you'll need to give your mouse some room to run in.

Your Mouse's Working Area

Because you use your mouse by moving it around on the table top, you will need to set up a working area for it. Here are some pointers.

- Your mouse's working space should be right next to your Apple. About a foot (30 cm) square of empty table top will do nicely. Make sure that it is flat and clean.
- You can move your mouse with either hand. Its 4-foot cable lets you put it on either side of your Apple IIc.
- The rubber ball on the bottom of the AppleMouse grips most surfaces. But occasionally it may encounter a table top that is too smooth to turn it properly. If this happens, just put down a large sheet of paper under your mouse.
- Give your mouse a clean habitat. Be careful not to let it run through wet or oily spots, dust, grit, eraser bits, cookie crumbs, or any other material that it might pick up. Such stuff can get carried inside, where it may gum up the works. For cleaning instructions, see Chapter 4.



Warning

It is possible for the small plastic pads on the underside of the AppleMouse to mar the surface they run on. Before operating your mouse on highly polished furniture, lay down a paper covering to protect the finish.

MousePaint

Packed with your AppleMouse is a program disk called *MousePaint*. It provides a fun way for you to get experience handling your mouse.

MousePaint turns your monitor screen into an artist's canvas where you can make drawings, lettering, and diagrams. You can change, move, erase, and redraw until you have created the picture you want; then you can store it on a disk or print it on an Apple Printer.

Getting Started

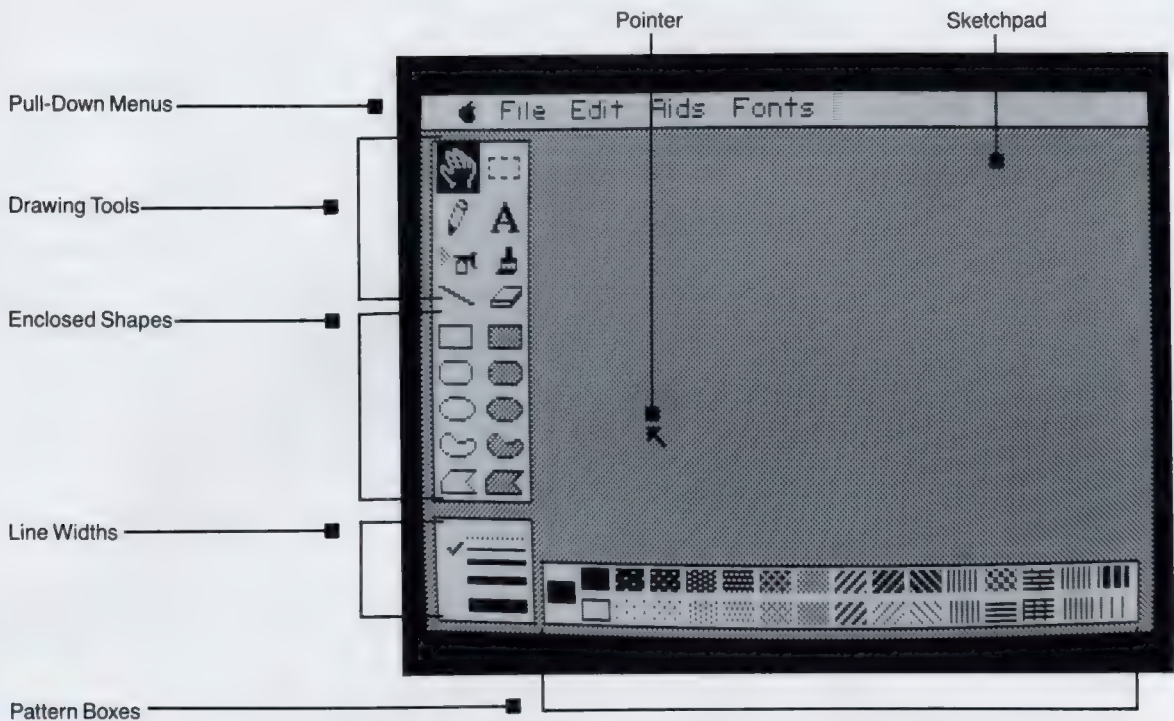
Put the *MousePaint* disk in the built-in disk drive of your Apple IIc computer and turn on the power. The drive will start whirring, and, after a few seconds, a menu with three choices will appear on your screen. Press **(RETURN)** to learn how to use your mouse.

Follow this self-guiding introduction carefully. It demonstrates several important techniques for using your mouse:

- How to move the **pointer** around on your screen;
- How to **click** your mouse by placing the pointer over a screen symbol and then pressing and releasing the mouse button;
- How to **drag** your mouse by moving it with its button held down;
- How to tell your computer what to do by selecting an option from a **Pull-Down menu**.
- How to clean up your MousePaint display by using **put-away icons**.

When you have finished the introduction, you will learn how to go to the main MousePaint program. The MousePaint display will appear on your screen, looking like Figure 3-1.

Figure 3-1. The MousePaint Display



The MousePaint Display

The parts of the MousePaint display are labeled in Figure 3-1 and are explained in detail later in this chapter. Here is a quick summary:

- The **sketchpad** is the area where you draw pictures. It starts as an empty pattern. One of the first things you will do is tell MousePaint to place a **blank screen** on it so you can start drawing.
- You use the **Pull-Down menus** to bring lists of MousePaint commands to the screen. These commands help you save your pictures on disk, cut and paste parts of them, select timesteps, and so on.
- You fetch the MousePaint **drawing tools** by means of their symbols—a pencil, a spray can, a brush, an eraser, and so on.
- The five pairs of **enclosed shapes** help you draw geometric figures. Each one has an outline form and a solid form.
- When you ask MousePaint to draw a line, you can specify its thickness by selecting one of the **line widths**.
- When you draw a solid figure, you can fill it with any one of the patterns shown in the **pattern boxes**.

- Somewhere on the display is a **pointer**. You move this around when you move your mouse.

MousePaint's drawing tools all have names and specific functions:

- The **grabbing hand** moves your picture around so you can work on different parts of it.
- The **editor's box** lets you mark off any part of your picture for modification by one of the Edit Menu commands.
- The **pencil** lets you sketch freehand lines.
- The **text letter** adds neat lettering to your drawings.
- The **spray can** helps you produce shading on your drawings.
- The **brush** draws a swath of black in your choice of widths.
- The **straight edge** helps you draw straight lines.
- The **eraser** rubs out unwanted parts of your pictures.

Making a Picture

Once the MousePaint display is on your screen, you are ready to create pictures. For starters, try drawing a box and writing your initials inside it. Here's how:

Getting a Blank Screen

1. Start out with the MousePaint display on your screen.
2. Roll your mouse until the pointer on the screen is on the **File** menu head in the top line.
3. Pull down the File menu; that is, hold down the mouse button and move the pointer downward.
4. Move the pointer to **Blank HiRes Screen**. Release the button. A blank screen will appear on the sketchpad.

Selecting Line Width and Pattern

1. Move the pointer down to the third line width from the top in the lower-left corner of the display. Click your mouse. The check mark will move to the width you selected.

2. Move the pointer to the fourth pattern box from the left in the bottom row. Click your mouse. The pattern you selected will appear in the box at the left end of the row.

Drawing a Shape

1. Move the pointer to the filled-in rectangular shape. It is half way up the left side, just under the eraser. Click your mouse. A black box will appear around the rectangle to show that it has been selected.
2. Move the pointer onto the sketchpad. Notice that it becomes a cross. Starting from a point near the upper-left corner of the sketchpad, drag your mouse (hold down the mouse button and move the pointer) diagonally down to a spot near the lower-right corner. MousePaint will draw a large rectangle as you go. It will be filled with the pattern you selected, and bordered by the line width you selected.

Using the Brush

1. Move the pointer to the brush symbol to the left of the sketchpad. Click your mouse. The brush becomes light on dark to show that you have selected it.
2. Move the pointer onto the sketchpad and inside the patterned rectangle you just drew. Now write your initials on the pattern, using your mouse. When you hold down the button, it's like putting the brush down; when you release the button, it's like lifting the brush. Don't worry if your writing is uneven or you make some extra lines; this is just for practice.

Modifying Your Picture

1. Move the pointer to the editor's box in the upper-right corner of the drawing-tools section to the left of the sketchpad (this is different from the enclosed-shape box that you used before). Click your mouse. The box becomes highlighted to show you it's working.
2. Move the pointer back onto the sketchpad and drag it diagonally over the first letter of your initials. MousePaint will draw the editor's box around that letter.
3. Pull down the **Edit** menu to **Invert** and release the mouse button. The part of your picture inside the editor's box will become light on dark instead of dark on light.



To **drag** the pointer, hold down the mouse button and move the pointer by moving the mouse.

If your picture looks a trifle crude, remember that even Michelangelo had to start somewhere. Now you're ready to explore MousePaint on your own. In the rest of this chapter, you'll learn about some of the things you can do with MousePaint.

Drawing Tools



The following sections describe MousePaint's drawing tools.

Grabbing Hand

The grabbing hand lets you push or pull fresh paper onto your sketchpad. The space you see on your monitor screen is only a part of the total page. To get more of it (or bring another part of a picture into view), use the Grabbing Hand as follows:

1. Click the hand symbol.
2. Move your mouse to any part of the sketchpad.
3. Drag (hold down the mouse button and move) the hand across any part of the sketchpad.

You can push or pull the page in any direction; when you reach an edge the page will stop moving. The hand does not need to be on your drawing when you move your mouse because you are moving the underlying page, not what's drawn on it.



Editor's Box

The editor's box marks off some part of your picture for further editing action. Here's how to use it:

1. Click the broken-line box symbol.
2. Drag the pointer diagonally across the element you want to edit. MousePaint draws a broken-line box around the element, with its opposite corners where you start and end the move.
3. Move the pointer to **E d i t** at the top of the MousePaint display. Hold down the button to see the Edit menu.
4. Move the pointer down to the Edit command you want and release the button. MousePaint will perform that function on the picture element inside the box. Editing commands are described later in this chapter.



Pencil

The pencil lets you make freehand drawings on your sketchpad:

1. Click the pencil symbol.
2. Move your mouse on the sketchpad to wherever you want to draw a line. When you press the button, you press the pencil against the page to draw. When you release the button, you raise the pencil off the page to move.

Note: The pencil writes either dark or light. Its color is the opposite of the color of the background where it first started.



Text Letter

The text letter lets you add lettering to your picture. Here's how to do it:

1. Click the big A symbol.
2. Move the pointer to **Font s** at the top of the MousePaint display. Hold down the button to see the menu of typestyles.
3. Move the pointer down to the typestyle you want and release the button.
4. Click your picture where you want your line of text to start.
5. Type the text you want on your keyboard.

You can move or edit lettering in your picture, just like any other element.

Caution: MousePaint uses the same memory area for lettering as for its Cut and Paste functions (see "Editing Commands" later in this chapter). When you select a lettering font, any previously cut clipping is destroyed.



Spray Can

The spray can helps you put shading on your picture:

1. Click the sprayer symbol.
2. Drag your mouse on the sketchpad to lay down shading. When you move over the same spot more than once, the shading gets darker.



Brush

The brush paints a swath of black in various widths. You choose a brush and use it like this:

1. Pull down the **Aids** menu and release the mouse button on **Set Brush**. A display of brush types will appear.
2. Pick the style of brushwork you want by clicking one of the symbols on the display.
3. Click the brush symbol in the drawing-tools section to the left of the sketchpad.
4. Drag the brush on the sketchpad where you want the to paint.



Straight Edge

The straight edge draws a straight line at any angle, in various widths and patterns. Here's how you use it:

1. Click the diagonal line symbol.
2. Click one of the line widths at the bottom left corner of the MousePaint display.
3. Click a pattern box at the bottom of the MousePaint display. The pattern you select will appear in the box at the far left. Select the plain black box for a solid line.
4. Drag the pointer on the sketchpad approximately where you want the line to be located. MousePaint will draw a neat, straight line of the width and pattern you selected between the beginning and end of the move.



Eraser

The eraser wipes clean any part of your drawing, quickly and easily:

1. Click the eraser symbol.
2. Drag the eraser on the sketchpad wherever you want to erase.

Enclosed Shapes

Below the drawing tools, on the left side of the MousePaint display, are five pairs of shape symbols. Each has an outline form and a solid form. When you select one of the shape symbols, MousePaint draws

a geometric figure on your sketchpad. If you choose the outline form, it just draws the perimeter; if you choose the solid form, it fills it with the currently selected pattern. Here's how to draw an enclosed shape:

1. Click the symbol for the kind of shape you want: rectangle, rectangle with rounded corners, oval/circle, free form, or polygon.
2. Click the line width you want for its perimeter, choosing from the selection at the lower-left corner of the MousePaint display.
3. Click a pattern at the bottom of the MousePaint display. If you select an outline form, MousePaint will use this pattern for the border; if you select a solid form, MousePaint will fill the inside with it.
4. Depending on the shape you chose, define its size and position on your sketchpad by one of the procedures that follow.

For **rectangles**, drag the pointer along a diagonal line. MousePaint will construct a rectangle with opposite corners at the beginning and end points of the move.

For **rounded-corner boxes**, do the same as for rectangles. The corner radius is the same for all sizes.

For **circles** and **ovals**, drag the pointer as if you were making a rectangle. MousePaint draws the largest circle or oval that will fit inside the rectangular space you have defined.

For **free-hand shapes**, drag the pointer around the outside of the shape you wish to draw.

For **polygons**, click your mouse at each corner.

Editing Commands

MousePaint's Editing commands let you manipulate large chunks of your picture—move them, duplicate them, delete them, or modify them. They operate only on the part of your picture that you have previously enclosed in the editor's box. Here are the details:

Move

To move any part of your picture to another place on the sketchpad, just do this:

1. Enclose in the editor's box the part of your picture you want to move.

2. Place the pointer inside the editor's box and move your mouse. The editor's box and its contents will move with the mouse.

Caution: As long as you hold down the mouse button, you can move the editor's box over other parts of your picture. When you release the mouse button, MousePaint erases everything covered by the box.

Cut and Paste

The Editor's Cut command scissors out the part of your picture that's in the editor's box. The resulting clipping is not destroyed, however; MousePaint stores it in memory. When you select the Paste command, the clipping is glued back into your picture at the place you specify. Here's how to cut:

1. Click the editor's box symbol (it's in the upper part of the drawing-tools section).
2. Drag the pointer diagonally over the part of your picture you want to cut out. MousePaint will draw the editor's box around it.
3. Pull down the `Edit` menu and select `Cut`. The material inside the editor's box will disappear.

To paste a clipping you have just cut into a new location, do this:

1. Pull down the `Edit` menu and select `Paste`.
2. Move the pointer (which now becomes a pointing finger) to any position on the sketchpad.
3. Click your mouse. The previously cut clipping will materialize on the sketchpad at the end of the finger.

You can paste any number of copies of one clipping in different places.

Caution: If you select two Cut commands in a row, the clipping from the first one will be lost. Only the most recently cut clipping is held.

Copy

The Editor's Copy command duplicates the part of your picture that's in the Editor's box, without removing the original. You use it in the same way as the Cut and Paste command, but the original remains behind on the sketchpad.

Delete

The Editor's Delete command erases everything inside the editor's box:

1. Enclose in the editor's box the part of your picture to be deleted.
2. Pull down the **Edit** menu and select **Delete**.

Did you just say "Oops"? Then use the Editor's Undo command (explained later in this chapter) to put it all back.

Invert

The Editor's Invert command changes all the white parts inside the editor's box to black, and all the black parts to white:

1. Enclose the part of your picture to be inverted in the editor's box.
2. Pull down the **Edit** menu and select **Invert**.

Flip Horizontally and Vertically

The Editor's flip commands turn over the part of your picture inside the editor's box, creating a mirror image. **Flip Horizontally** trades right and left; **Flip Vertically** trades top and bottom:

1. Enclose the part of your picture to be flipped in the editor's box.
2. Pull down the **Edit** menu and select **Flip Horizontally** or **Flip Vertically**.

Undo

The Editor's Undo command reverses the last action you took, returning your picture to its previous state. Just pull down the **Edit** menu and select **Undo**. You must use this command right away, however—it works only on the very last thing you did.

Drawing Aids Commands

MousePaint's Aids menu contains several commands that help you make neat, detailed drawings.

FatBits

The **FatBits** command creates an enlarged view of a small part of your picture, each point of which appears as a separate black square. With **FatBits**, you use the MousePaint drawing tools to make finely detailed changes. You can create or erase individual points by clicking the pencil on them, fill precise areas with the brush or spray can, or edit small regions. You can also create any of MousePaint's enclosed shapes in miniature. All the changes you make will be faithfully incorporated into the original sketchpad image. Here's how to use the **FatBits** command:

1. Using the Grabbing Hand, move part of your picture in the upper-left corner of the sketchpad.
2. Pull down the **Aids** menu and select **FatBits**.
3. Select one of the MousePaint shapes or drawing tools, as explained earlier in this chapter.
4. Follow the procedure for the shape or drawing tool you selected, working on the enlarged view.

When you have finished with **FatBits**, just click **FatBits** on the **Aids** menu a second time.

Show Page

The **Show Page** command creates a miniature image of your entire picture, including parts that are not currently in view. This lets you check your picture as a whole. It's simple:

1. Pull down the **Aids** menu and select **Show Page**. The miniature page will appear.
2. To move the miniature page around, place the pointer on the highlighted heading, **Show Page**, and drag (hold down the mouse button and move) the page.
3. When you are finished viewing the whole page, click your mouse on the rectangle in its upper-left corner.

Set Brush

The Set Brush command allows you to select the kind of line the brush will paint. Here's how:

1. Pull down the **Aids** menu and select **Set Brush**.
2. Click one of the brush styles shown on the menu.

Grid

The Grid command adjusts the positions of lines and enclosed shapes as you create them, so that they always fall on a set of invisible grid lines. This helps keep your drawing neat; you don't have to worry about positioning everything exactly right. You start and stop the Grid command by pulling down the **Aids** menu and clicking **Grid**. It keeps working until you tell it to stop.

Caution: If you use **Fatbits** with the grid on, the pencil (and other tools) will not work as you might expect. Be sure to click **Grid** to turn it off when you no longer need it.

Filing Commands

Once you have created the picture you want, MousePaint provides a variety of commands to help you store it or print it.

Blank Screens

MousePaint gives you a choice of blank screens to put on your sketchpad. They are listed on your sketchpad. To fetch one, just pull down the **File** menu and release the mouse button on your selection.



Warning

*Whenever you fetch a blank screen, the picture on your previous screen is destroyed. If you want to preserve your picture in a disk file, use the **File** menu command, **Put a Copy In**, first.*

Disk Names and Filenames

MousePaint uses the same file-naming rules as does Apple ProDOS™. If you are not familiar with ProDOS™, here's an abbreviated summary:

Acceptable Names

When you format a storage disk, MousePaint asks you what to name that disk. When you create a new file on a storage disk, MousePaint asks you for a filename. In either case, you must think up a name that conforms to all of the following rules:

- The name must begin with a slash followed by a letter.
- It can contain only letters, numbers, and/or periods.
- It must not be longer than 15 characters.

Here are some example names that conform:

/PRODOS.NAMES.15
/D510414
/FILE.NAME
/A



Warning

It is a good idea to write down your disk name and all its filenames on the disk's label. If you forget them and can't type them on your keyboard, MousePaint will be unable to fetch the corresponding files. You can use your ProDOS User's Disk to catalog your disk if you forget the filenames.

Calling a File

Whenever you create a new MousePaint storage file, or retrieve or delete an old one, you must type its complete name on your Apple IIc keyboard. The complete name consists of the disk name followed by the filename. You must use the *disk name*; a disk drive designation (such as “D1” or “#4:”) won't work.

Here are some examples of correct ways to designate MousePaint files:

/DISKNAME/FILENAME
/DISK.1/FILE.305
/MOUSEDRAWINGS/D.MARSON
/A/A
/MY.CARTOONS/FELIX.THE.CAT

Here are some examples of disk names and filenames that won't work with MousePaint:

DISKNAME/FILENAME	(Disk name does not begin with /)
/DISK NAME /FILE NAME	(Spaces not allowed)
/DISKNAME/305.FILENAME	(/ must be followed by a letter)
/A.LONG.DISK.NAME/FILENAME	(Disk name too long).

Formatting a Storage Disk

To save your MousePaint picture, you must store it on a disk with a special format. The Format Disk command converts ordinary flexible disks into MousePaint-formatted disks.

Note: MousePaint uses the Apple ProDOS operating system. If you have the ProDOS software, you can use it to format MousePaint disks and manipulate MousePaint files.

Here's how to format a disk to accept MousePaint files:



Warning

Formatting a disk destroys all the files that were previously on it. Are you sure you want to do that? Be careful not to format your MousePaint disk accidentally.

1. Pull down the **File** menu and select **Format Disk**.
2. Remove the *MousePaint* disk from your built-in disk drive.
3. Place the disk you want to format in the built-in drive, where the *MousePaint* disk was.
4. On your Apple IIc keyboard, type the name you want to give your storage disk. Follow the rules given earlier in this chapter in the "Disk Names and Filenames" section.
5. Press **(RETURN)** on your keyboard. Your disk drive will whirr for several seconds while it formats the disk.
6. Remove the formatted disk and replace the *MousePaint* disk.

Put a Copy In

The Put a Copy In command is used to save a picture. When used it creates a new disk file containing a copy of the picture that's on the page. You do it this way:

1. Be sure you have a ProDOS-formatted disk in your built-in drive.
2. Pull down the `File` menu and select `Put a Copy In...`
3. MousePaint places a new line at the top of the screen, saying `Save as file named...` Type the filename under which you want to store your picture (including the disk name). If you're not sure how to create a MousePaint filename, see the section "Disk Names and Filenames" earlier in this chapter.
4. Press `(RETURN)`. MousePaint opens a new disk file and stores your picture in it.

You can also use this command to duplicate a file, giving it a different name.

Get Picture

The Get Picture command fetches a picture that you previously stored on disk and places it on the MousePaint sketchpad. Here's how to retrieve a picture from your files:

1. Make sure your ProDOS-formatted storage disk is in your built-in disk drive.
2. Pull down the `File` menu and select `Get Picture...`
3. MousePaint places a new line at the top of the screen, saying `Get picture named...` Type the name of the file that you want to retrieve (including the disk name), and then press `(RETURN)`.
4. MousePaint will fetch the file and copy it onto the sketchpad.



Warning

Whenever you get a new picture, the work presently on your sketchpad is erased.

Put Back Picture

The Put Back Picture command updates the disk file from which you originally fetched a picture by storing the current state of the MousePaint sketchpad under the same name. It thus overwrites the original file with the current picture. This command provides a handy way to save your work periodically as you are creating a picture. It's simple to do:

1. Make sure the disk that your current picture came from is still in your built-in disk drive.
2. Pull down the **File** menu and select **Put Back Picture**. MousePaint will find the original disk file and update it.
3. Wait until the disk drive light has gone out before resuming work on your sketchpad.

Delete File

The Delete File command erases a picture stored on disk. Here's how to do it:

1. Make sure the file you want to delete is on a disk in your built-in disk drive.
2. Pull down the **File** menu and select **Delete File...**
3. MousePaint places a new line at the top of the screen, saying **Delete file named...** Type the name of the file you want to delete, including its disk name, and press **(RETURN)**.
4. MousePaint will erase that file.

If you change your mind and want to cancel the Delete command (before completing step 3), just click your mouse.

Print Picture

The Print Picture command sends the picture on the MousePaint sketchpad to an Apple Imagewriter or other Apple printer. If you have one of these devices in your Apple system, it's easy to make a paper copy of your current artwork:

1. Make sure that your printer is turned on and has fresh paper.
2. Pull down the **File** menu and select **Print Picture**.

3. MousePaint places a new line at the top of the screen, asking you what slot number your printer is connected to. Type slot number 1 (this is really the connector number which your printer should hook up to), and press **RETURN**.
4. MousePaint sends commands to your printer, telling it how to create a dot-by-dot copy of the image on the sketchpad.

Wait until your printer is finished before working further with MousePaint. Some pictures may take several minutes to print.

Care and Feeding

As you push your mouse about on the table, the ball on its underside may pick up dirt and carry it inside. To clean your mouse, just do the following:

1. Turn your mouse over. On its tummy you will see a black, plastic disc with a hole in its center. The disc has a round mark near its edge, which should be opposite the letter *L* (for *locked*) engraved in the mouse. See Figure 4-1.
2. Pressing down on the disc, turn the black disc counterclockwise one-eighth of a turn as shown in Figure 4-2. This will bring the mark on the disc opposite the letter *O* (for *open*).
3. Cup your hands around the mouse and turn it right side up. The black disc will fall out, and with it the ball (see Figure 4-3).

Figure 4-1. The Underside of Your Mouse



Figure 4-2. Unlocking the Disc



Figure 4-3. Removing the Disc and Ball



4. Wipe the ball clean. If it is greasy, wash it with warm, soapy water, and dry it thoroughly with a lint-free cloth.
5. Turn the mouse back upside down. If there is any material in the hole on its bottom, gently pick it or shake it out. Do not try to blow it out. This may just drive the material farther inside. Do not attempt to wash out the cavity or use solvents on it.

6. Place the clean ball back into its hole in your mouse's tummy.
7. Replace the black, plastic disc, orienting it so that the spot on its rim is near the letter *O*. Pressing down on the disc, turn it one-eighth of a turn clockwise, bringing the spot to the letter *L*. This should lock the disc in place.
8. Turn the mouse right side up. It is ready for use again.

This is about all the care your AppleMouse needs. If you keep it clean and don't drop it, it will function for many years.

Writing Mouse Programs in BASIC

If you understand BASIC (*Beginner's All-Purpose Symbolic Instruction Code*), you will find it easy to write programs that work with your AppleMouse. This appendix tells you how.

The BASIC Mouse

In a BASIC program, your AppleMouse acts like any other peripheral device—like a printer or a disk drive. You activate it with a PR# command and then extract information from it with an IN# command followed by INPUT. It returns information about its location and button status in the form of a sequence of numbers.

Calling Your Mouse

The AppleMouse is treated as a device in slot 4, even though your Apple IIc has no slots. The AppleMouse contains a permanent program (*firmware*) that allows it to communicate with BASIC programs. So to call the mouse from a BASIC program, you must first start up the mouse's own internal program.

To do so, your BASIC program wakes up your mouse by sending the startup message 01 to its firmware, using the PR# command followed by a PRINT statement. If you are running Apple DOS or ProDOS, precede the PR# command with a CONTROL-D (ASCII 04) character. You can do all this with the command sequence

```
PRINT CHR$(4);"PR# 4" : PRINT CHR$(1)
```

This command sequence places the mouse in BASIC mode and sets the mouse position numbers to zero. Don't forget to follow it by PRINT CHR\$(4);"PR# 0" if you are subsequently going to use the screen for output.

Reading the Mouse Position

After your BASIC program has started up the mouse, it can read the mouse's position and button status (that is, whether the button has been pressed) at any time by executing an `IN# 4` command followed by `INPUT` to three numeric variables. For instance, the sequence

```
PRINT CHR$(4); "IN# 4" : INPUT " "; A, B, C
```

places mouse position and button data into the numeric variables `A`, `B`, and `C`.

The numeric information returned by your AppleMouse in BASIC mode has the following format:

`A, B, +C`

where

- `A` is the last `X` (horizontal) position of the mouse
- `B` is the last `Y` (vertical) position of the mouse
- `+` becomes `-` if a key on the keyboard has been pressed
- `C` indicates the status of the mouse button

`A` and `B` vary over the range 0 to +1023 (they are never negative). Assuming the mouse is oriented with its tail away from you, `A` increases as you move the mouse to the right; `B` increases as you move the mouse toward you (away from its tail).

The status digit (`C`) returns a value in the range 1 through 4, plus or minus, reporting both the present status of the mouse button and its status the last time your program executed an `INPUT` command. Table A-1 shows the meaning of each value of the status digit.

Table A-1. Status Digit Values

<code>C</code>	Current Reading	Last Reading
1	Pressed	Pressed
2	Pressed	Released
3	Released	Pressed
4	Released	Released

If you press any key on your Apple keyboard, the sign of `C` changes from positive to negative. It stays negative until you reset it to positive with the command

```
POKE -16368,0
```

Turning off the Mouse

When your program is finished using the mouse, turn it off by sending it the ASCII character 00. The BASIC commands are identical to those that call the mouse (see the section "Calling Your Mouse" earlier in this appendix), except that 0 is substituted for 1 in the second PRINT statement:

```
PRINT CHR$(4);"PR# 4" : PRINT CHR$(0)
```

A Sample Program: **MOUSE.MOVE**

MOUSE.MOVE displays on your monitor screen the numbers (X, Y, and S) generated by the AppleMouse. You can roll your mouse around and watch the numbers change. To exit, press any key on your Apple keyboard. Here's the listing:

```
10 HOME
20 PRINT "This is a demonstration of the
   Mouse"
30 PRINT CHR$(4) ; "PR#4" : PRINT CHR$(1)
40 PRINT CHR$(4) ; "PR#0"
50 PRINT CHR$(4) ; "IN#4"
60 INPUT "" ; X, Y, S
70 VTAB 10 : PRINT X;" ",Y" ",S" "
80 IF S > 0 THEN G0
90 PRINT CHR$(4) ; "IN#0"
100 PRINT CHR$(4) ; "PR#4" : PRINT CHR$(0)
110 PRINT CHR$(4) ; "PR#0"
120 POKE -16368, 0 : REM CLEAR KEYBOARD STROBE
130 END
```

Comments

Line 10 clears the screen to black.

Line 20 prints a heading message.

Line 30 starts up the mouse's internal program.

Line 40 establishes that subsequent PRINT commands will send information to the monitor screen.

Line 50 establishes that the subsequent INPUT command will read the mouse.

Line 60 transfers mouse position and button status readings to the numeric variables X, Y, and S.

Line 70 displays the numeric variables X, Y, and S on the 10th line of the monitor screen.

Line 80 returns the program for more mouse data if no keyboard key has been pressed. If a key has been pressed, the program drops to line 90.

Line 90 re-establishes your keyboard as the input device.

Line 100 resets the mouse position data to zero.

Line 110 re-establishes the monitor screen as the output device.

Line 120 resets the keyboard strobe so that the next time a key is pressed BASIC can check for it (see the Applesoft BASIC Programmer's Reference Manual, Appendix F, section F.2 for details).

Line 130 ends the program.

A Sample Program: **MOUSE.DRAW**

MOUSE.DRAW allows you to use your mouse to make simple drawings on your monitor screen in low-resolution graphics mode. Pressing the mouse button clears the screen so that you can start over. Pressing any key on your keyboard produces a prompting message; you can reply by pressing either **RETURN** to continue or **ESC** to terminate the program. Here's the listing:

```
10  REM Uses mouse to draw lo-res graphics
100 GOSUB 1000 : REM Turn on the mouse
110 PRINT CHR$(4) ; "IN#4"
120 INPUT " "; X, Y, S : REM Read mouse data
130 IF S = 1 THEN 100 : REM Clear the screen
140 IF S < 0 THEN 300 : REM Time to quit?
150 REM Scale mouse position
160 X = INT (X / 25.575)
170 Y = INT (Y / 25.575)
180 PLOT X, Y
190 GOTO 120

300 REM Check if time to quit
310 POKE -16368, 0 : REM CLEAR KEYBOARD STROBE
320 PRINT CHR$(4) ; "IN#0"
```

```

330 VTAB 22 : PRINT "Press RETURN to cont or
    ESC to quit"
340 VTAB 22 : HTAB 39 : GET A$ : POKE -16368,0
350 IF A$ = CHR$(13) THEN HOME : GOTO 110
360 IF A$ <> CHR$(27) THEN 330
370 REM Clear screen and zero mouse
380 TEXT : HOME
390 PRINT CHR$(4) ; "PR#4" : PRINT CHR$(0)
400 PRINT CHR$(4) ; "PR#0"
410 END

1000 REM Clear screen and initialize mouse
1010 HOME : GR
1020 COLOR = 15
1030 PRINT CHR$(4) ; "PR#4" : PRINT CHR$(1)
1040 PRINT CHR$(4) ; "PR#0"
1050 RETURN

```

Comments

Line 10 reminds you what the program does.

Line 100 calls the subroutine at lines 1000 through 1050.

Line 110 establishes that the subsequent INPUT command will read the mouse.

Line 120 transfers mouse position and button status data to the numerical variables X, Y, and S.

Line 130 re-initializes the mouse if its button is pressed.

Line 140 sends the program to its exit routine if a key on the Apple keyboard has been pressed.

Line 150 reminds you of what the next two lines do.

Lines 160 and 170 convert the range of mouse position numbers (0 to 1023) to the range of low-resolution graphics coordinates (0 to 40).

Line 180 plots a point on the monitor screen.

Line 190 sends the program back for more mouse data.

Line 300 reminds you what lines 310 through 400 do.

Line 310 resets the keyboard strobe so that the next time a key is pressed BASIC can check for it (see the Applesoft BASIC Programmer's Reference Manual, Appendix F, section F.2 for details).

Line 320 tells the computer to accept input from its keyboard.

Line 330 prints prompting instructions on line 22 of the screen.

Line 340 fetches your answer to the prompt and changes the button status number back to positive (it becomes negative whenever you press a key on the Apple keyboard).

Line 350 sends the program back to reporting mouse data if you pressed `RETURN`.

Line 360 fetches another answer if you press any key except `ESC`.

Line 370 reminds you of what happens next.

Line 380 cancels graphics mode and clears the screen.

Line 390 resets the mouse position data to zero.

Line 400 reestablishes the monitor screen as the output device.

Line 410 ends the program.

Line 1000 reminds you what the following subroutine does.

Line 1010 clears the monitor screen and sets up Apple's low-resolution graphics mode.

Line 1020 establishes that the cursor will be white.

Line 1030 starts up the mouse's internal program.

Line 1040 establishes that subsequent `PRINT` commands will send information to the monitor screen.

Line 1050 returns to the main program (line 110).

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